**AGNR Strategic Planning and Advisory Meeting**

**Agenda**

**Thursday May 16- 8AM-11AM**Building 60B, AGNR Department

**Attendees:**

Lyn Shirley (Plant Science Instructor, and Field Biologist)

Carlos Ruiz (Horticulture Instructor and Orange County Nursery Manager)

Dolores Gault (Landscape and Irrigation Instructor, Instructional Assistant and Former Rancho Santa Ana Botanical Gardens Manager)

Brian Hammer (Urban Food Instructor and GIS and Mojave Water Agency GIS Analyst)

Ben Lehan (Instructor Sustainable Agriculture, Cal Poly Pomona Instructor and former Cal Dept. of Pest Control

Duane Penfold (Animal Science and Nutrition Instructor and Apple Valley High School AG teacher, FFA Coordinator)

Troy Van Bavel (Lucerne Valley High AG teacher, FFA Coordinator)

Neville Slade (Department Chair, Natural Resources and Animal Science Instructor and Director Resource Conservation District)

Tony Walters (Resource Conservation District and Irrigation Water Manager and former student)

Dayan Anderson (Former Specialty Minerals Manager, Mountain Foundation and former student)

Miranda Buckley (Cal Poly Pomona Plant Sciences student and former VVC student)

Belinda Serrano (Professional Expert, Conservation Technician RCD, and former student)

Dr. Todd Scott (Dean of Health Sciences and Industrial Technology Division)

Michele Thompson (Student, Vice President Environmental Club)

**State of Department and VVC/State CCC Initiatives**

Student Centered Funding Model

Neville discussed the new funding model which is student success driven and allows for funding over and above FTES, to include funding for completion of Associate Transfer Degrees (ADT). Chancellor approved Certificates of Achievement and completion of CTE classes. Duane Penfold discussed the need for stackable certificates in Animal Sciences and Veterinary Science.

are already submitted to the Curriculum Committee and include: Equine Science Specialist 13 or 14 units; Veterinary Assistant 17 to 19 units and Animal Science Specialist 22 to 24 units. Neville discussed that labor market data showed a shrinkage in the animal sciences but a significant need for veterinary assistant and technicians. Troy Van Bavel endorsed that there is a large need for animal health and safety training including training for Animal Control Workers.

Dolores Gault highlighted the need for a certificate of achievement in Ecological Restoration (Approx. 17units) that would be stackable under our recently approved certificates of achievement in Landscape Horticulture (24 to 27 units) and Plant Science (22 to 25).

Neville proposed that we need to update Certificates of Achievement (COA’s) into stackable certificates in Geospatial Technology and Natural Resource Management endorsed by Brian Hammer

Associate Transfer Degrees- Transfer Model Curriculum, General education

Neville stated that we will be launching the AG Sciences, Plant Sciences ADT this school year 2019-2020 and given resources to build and staff labs will fully launch the AG Sciences Animal Sciences ADT in 2020 – 2021, these classes are fully transferable to the Cal States and can be used in the General Education Matrix both at VVC and the CSU’s. AGNR has four General Education Classes:

AGNR 170 Environmental Science and Sustainability – Life Science without Lab

AGNR 123 Plant Science – Life Science without Lab

AGNR 175 Sustainable Agriculture, Environment and Society – Social Science

AGNR 178 Agricultural Economics – Social Science

Lyn mentioned the strong data for soils and plant sciences majors to enter the Natural Resource Management Careers. Particularly with Natural Resource Management Agencies such as Bureau of Land Management, Forest Service and National Park Service. Tony Walters endorsed the need for these professionals to work for the Natural Resource Conservation Service (NRCS) and several local agencies like the Mojave Water Agency and the Air Quality Control District. He stated that these careers often require a four year degree in the Environmental Sciences and that our two new associate transfer degrees are perfectly positioned to do this.

Pathways- Career and Guided

Brian Hammer discussed the need to continue to partner with UCR extension on their Master Gardner and Master Composter classes. Dayan Anderson discussed articulating our AGNR 170L (1 unit) class with the California Naturalist Certificate that will be launched by the Mountain Foundation this summer in Big Bear. Neville discussed the usefulness of beginning strategic planning on career pathways over 10 years ago when a group of VVC instructors from several departments and partners from the community attended a career pathway planning seminar in Palm Springs.

Math and English Changes

Neville highlighted these changes that include doing away with the assessment exams and drastically reducing the lower level remedial classes for English and Math. We are fortunate because the TMC’s require Math 120 but Entry into Chemistry would also require Math…. As a prerequisite

Dual Enrollment- High School articulation

Discussed the success of the current dual enrollment classes, over the past three years at Granite Hills and Academy for Academic Excellence – this is a great outreach and mechanism to recruit students into VVC and our program. Troy Van Bavel expressed an interest in teaching and offering the AGNR 170 Fall, AGNR 175 Spring sequence at Lucerne Valley High School, these classes were offered several years ago as concurrent enrollment and can integrate well into High School AG leadership and agricultural systems classes.

Distance Education

Neville discussed the importance of online and hybrid delivery of classes in the future to ensure implementation of our very diverse programs and the travel distances involved for our students. VVC is moving to a new instructional management system – Canvas and all adjunct should try to get the training and become certified.

Our Planning- PRAISE – Program review process

Neville discussed newly completed 3 year cycle. Program Planning has been driven by:

1. Our long-standing AGNR Advisory Board (includes leaders from K12 Education, Community, Industry and Government Agencies) and our faculty, who are actively engaged in local Natural Resource Management and Conservation Organizations. This focus ensures Community and industry alignment of our course and programs. They have developed a seven (7) year Strategic Plan (began in 2012) that has shaped this program and will inform its future planning.
2. A focus on Career Technical Pathways this began when we (three VVC department chairs) and several community partners attended one of the State of California’s original Pathway workshops in Palm Desert in 2010. Facilitates a focused two year course of study at VVC for our students and seamlessly transfer via an AST degree to a university and/or achieve one or more Chancellor approved CTE Certificates of Acheivement and enter a career in this rapidly expanding field The 2019-2020 school year will see the full launch of our Plant **Science and Sustainable Agriculture CTE Pathway** and 2020-2021 will see full launch of our **Animal Science and Vet Assistant CTE Pathway**
3. Development of two Associate of Science Transfer Degrees (ADT). Our Department Chair served on the State Chancellor’s office FDRG team to design the three AGNR ADT degrees and after 5 years of planning at VVC, two new ADT’s were approved by the Chancelors office- Agriculture Science/Plant Science and Agriculture Science/Animal Science.
4. Developing industry relevant CTE classes and industry recognized certification that prepare students for entry into careers in this sector and facilitate industry required license exams. Examples include: Qualified Water Efficient Landscaper (QWEL-EPA); Irrigation Technician and Auditor (IT-Irrigation Association); Pest control Advisor (PCA-California Pest Control Dept.)
5. Extension of our existing articulation and concurrent enrollment partnership with local Agriculture High Schools (Appple Valley, Serrano and Lucerne Valley) to include Dual Enrollment with several high schools ( piloted with the Academy for Academic Excellence and Granite Hills HS in 2017-2018 and 2018-2019
6. Student and Program Learning Outcomes assessment and student recommendations.
7. Collaborating with other VVC Departments through co-developing classes and including other department's classes as electives in our Certificates, includes: Computer Science (Data Management classses); Construction Technology (Waste Water, Water Distribution classes); Electronics (Systems Control and Data Acquisition- SCADA classes), Political Science (Environmental Policy class).

Key strategic *planning in*itiatives are: Planning and Implementation of Career Technical (CTE) Pathways that allow students to begin in High School, transition to a focused two year course of study at VVC and seamlessly transfer via an AST degree to a university and/or achieve one or more Chancellor approved CTE Certificates and enter a career in this rapidly expanding field (Advisory Board recommendation)

Goal 1: Fully Implement Plant Science and Sustainable Agriculture CTE Pathway in 2019-2020 and 2020-2021 school years

Goal 2: Planning and Development of our Animal Science and Vet Assistant CTE Pathway2 019-2020 and 2020-2021 school years, full implementation in 2012-2022

Goal 3: Redesign and implementation of Geospatial, Watershed Management and Environmental Sciences and Natural Resources program and Certificates of Achievement

Personnel- New IA

Lyn and Neville thanked Dolores (new IA) and Belinda Serrano (Professional Expert) for reinvigorating the horticulture and green house program. Just completed our most successful plant sale/community outreach. Student moral in the department is extremely high with a very vibrant student club now helping with outreach and the plant sales. Neville discussed significant instructional and lab technician needs if we are to launch the “new” Lab Science classes and associated labs and field studies….

Infrastructure Improvements- Greenhouses; Labs- Seed, Ag Sciences and Animal Science; Facilities Refurbish

This year has significant refurbishing of horticulture labs and facilities, (includes conversion of a greenhouse into an AG Science/Soils Lab and a Hydroculture Lab, also have begun construction on the Animal Science Barn that will include an Animal Physiology Wet Lab. Financing was obtained from Bond JJ and Strong Work Force funding (mostly for lab stations, supplies and equipment).

1. **Introduce Agricultural Sciences and Natural Resource Management Pathway Feasibility Study**

(Attachment 2) Brian Hammer reinforced the need for a second full time instructor (Plant Sciences) and better labs and state of the art computers/equipment for the GIS/Geospatial Technologies Program, also the rewriting and chancellor approval of the Geospatial Technology, Watershed Management and Natural Resource Management Certificates of Achievement . He also expressed the need for more outreach. Neville stated that although VVC now employs an outreach coordinator they do not necessarily know our community and the need of the community. Neville and Tony expressed the need for counseling support that was focused on these pathways and our programs. Neville stated that some programs did get counseling support and this was extremely helpful when Melanie Dube Price was able to counsel our students under a CTE Grant several years ago. Belinda mentioned our need to collaborate with RCD and NRCS on specific restoration projects. Students can gain valuable work experience as Earth Team Volunteers and VVC can focus its plant production and student learning around the native plants and restoration techniques needed for projects with BLM, Fish and Wildlife, and others. Tony discussed that students are already assisting RCD in the Los Flores Ranch grazing and management project and that this includes soils, plant science and GIS experience. Carlos highlighted the need for Arboriculture and permaculture classes and certification, and the importance of food safety training for food inspectors and the food processing industry that is a strong component of our local agricultural industry. Tony Walters and Belinda discussed the need for education for an estimated 100+ “micro” farms that are focusing on tree crops –Jujube and pistachio and vegetables, this includes soils, plant and irrigation education and an increase in the workshops that we have collaborated on with MWA and RCD in the past and over the past year.

1. **Animal Science and Veterinary Assistant Pathway Feasibility Study**

(Attachment 3 )

1. **Curriculum Planning**: Review of Certificates; Schedules for 2019-2020; Articulation of Classes

Attachment 1- PRAISE Planning 2019-2022 Cycle

PRAISE 208-2019

**Program Goal 1**: Plant Sciences and Horticulture Program Enhancement Better serve Plant Sciences and Horticulture students by improving support for learning and labs in response to increased industry need

**Action Plan**: Curriculum development (redesign and simplify) CTE Certificates Deactivate-Landscape Irrigation Design; Environmental Horticulture and Restoration Technician- Spr 18 Reduce- Floral Design Technician to less than 12 units (Not requiring Chancellor office approval) Seek Chancellor office approval- Horticulture and Plant Sciences Specialist and Landscape Specialist to over 17 Industry Endorsement- Qualified Water Efficient Landscaper(QWEL)- EPA; CA Dept for Pesticide Reg.; Irrigation Ass. Update and reduce number of classes Deactivate AGNR 176- Advanced Irrigation All classes not updated in two years - 6 classes in 2017\_2018, final 6 in 2018\_2019, Seek VVC- General Education approval for AGNR 131 Soil Science (Spr 18) Laboratory and Technology classes Enhance curriculum for each Lab session in AGNR 122, 123, 140 (Spr 18) 131, 141, 150, 152 (2018-2020) Full lab documentation Lab and/or Technology Skill Project Descriptions Student Lab Report and/or Technology Skill Project Templates Equipment and Supplies Lists Re-Hire Environmental Horticulture Instructional Assistant/Greenhouse Manager Hire Full Time Horticulture/Plant Sciences Instructor Purchase industry appropriate technology/equipment (mechanized propagation, plant labeling equipment) Purchase lab supplies (Augment Instructional Supplies Budget from $3800 to $12000 p/a) Purchase Software licenses for Landscape Design package and Plant Materials and Identification Refurbish and Repair Facilities Roofs on two Greenhouses and Seed Lab Straw-Bale Entrance Fencing for seed production test plots

Goal Status: 1. Proposed Goal in Program Review 04/16/2019 Outcomes Assessment, Other (describe in next field) Justification/Description: PLO and SLO Assessment in 2016-2017 indicates need for improvement in Lab and Technology class in: Curriculum Improvement and reduced reliance on Adjunct Equipment purchase (Perkins)

Bettter Instructional/Lab Supplies (Grant Funded) Facilities Refurbishing and Improvement Type (hold ctrl to select all that apply): Ongoing expense Follow Up on Request: Request not funded, continued request Prioritize Item: High Priority Quantity: one- 10 month Cost: $75,000 1000 - New Faculty Hire - Full Time Horticulture/Plant Sciences Instructor (Active) Justification (hold ctrl and select all that apply): Outcomes Assessment, Safety, Decline/stasis of student success, Other (describe in next field) Justification/Description: This position is scheduled to be "re-located" to another department Nature of maintaining greenhouses and living plant materials for Horticulture Lab classes Infusion of new focus to this position will greatly improve student success Type (hold ctrl to select all that apply): Ongoing expense Follow Up on Request: Request funded, discontinue request Quantity: one Cost: $55,000, 12 month

Employeee 2000 - New Classified Hire - Re-Hire Instructional Assistant and Greenhouse Manager (IA-3) (Active) Justification (hold ctrl and select all that apply): Outcomes Assessment, Safety, Decline/stasis of student enrollment, Decline/stasis of student success, Other (describe in next field) Justification/Description: Need for Subject Matter Experts is justified by: Industry relevance to complete this work that is best done by industry professionals many of them who are our Adjunct already. Note: Partially funded for Spring 2018 by our BLM Grant- Continuation will be requested under SWP grant proposal for 2018\_2019 Type (hold ctrl to select all that apply): One-time Money Follow Up on Request: Request not funded - discontinue request Quantity: Four classes Cost: $64/hour x 48hours x 4= $12,288 5000 - Other Operating Expenses - Subject Matter Experts -48 hours to update curriculum on Lab/Technology Classes (Active)

PLO and SLO Assessment in 2016-2017 indicates need for improvement in Lab and Technology class Quantity: multiple Cost: $12000 4000 - Supplies and Materials - Seed and Horticulture Lab Supplies and Materials (Active) 04/16/2019 Generated by Nuventive Improve Page 2 of 9 Program Annual Planning and Augmentation: HSPSIT - Agriculture and Natural Resources in: Equipment purchase (Perkins) Better/More Supplies Partially Funded ($7000) in 2017-2018 by Rio Tinto and BLM Grants Type (hold ctrl to select all that apply): Ongoing expense Follow Up on Request: Request partially funded, continued request Prioritize Item: High Priority Justification (hold ctrl and select all that apply): Outcomes Assessment, Safety, Decline/stasis of student success, Other (describe in next field)

need for improvement in Lab and Technology class in: Facilities Refurbishing and Improvement- Funded by Bond JJ Funds in 2017\_2018 Type (hold ctrl to select all that apply): One-time Money Follow Up on Request: Request funded, discontinue request Prioritize Item: High Priority Quantity: Roofs on two Greenhouses and Seed Lab Straw-Bale Entrance Fencing for seed production test plots Cost: $45,000 5000 - Other Operating Expenses - Refurbish Facilities (Active) Justification (hold ctrl and select all that apply): Outcomes Assessment, Safety, Decline/stasis of student success Justification/Description: needed to align with industry trends. To be requested under Perkins and SWP funding Type (hold ctrl to select all that apply): One-time Money, Requested in Perkins Follow Up on Request: Request not funded, continued request Prioritize Item: High Priority Quantity: mechanized propagation plant labeling, Cost: $16,000 6000- Equipment - Purchase industry appropriate technology/equipment (Active) Justification/Description: Curriculum and program development- Partially funded under BLM grant in Spring 2018 ($10,000) to requested under SWP proposal for 2017-2018 Type (hold ctrl to select all that apply): One-time Money Follow Up on Request: Request not funded, continued request Prioritize Item: High Priority Quantity: 10 hrs/week x 32 weeks (Spring and Fall semesters) Cost: 10 x 32 x $68/hr= $21,760 5000 - Other Operating Expenses - Department Chair release time (Active) Justification (hold ctrl and select all that apply): Outcomes Assessment, Decline/stasis of student enrollment, Decline/stasis of student success Justification/Description: Exposure of students to Industry standard software Type (hold ctrl to select all that apply): Ongoing expense, Requested in Perkins Follow Up on Request: Request funded but is an ongoing request Quantity: 1 x Landscape Design package 1 x Plant Materials and Identification package Cost: $4000 5000 - Other Operating Expenses - Purchase Software licenses (

Attachment 2

**Agricultural Sciences and Natural Resource Management Pathway**

**Feasibility Study**

May 15, 2019 **Final**

**Plan Narrative**

This Agricultural Sciences and Natural Resource Management Pathway is designed to better serve agriculture and natural resource students by improving support for learning and labs in response to increased industry need that has developed over the past ten years. Growth and program focus is supported by AGNR Advisory recommendations and workforce trends/data. This includes a significant increase in the need for trained individuals in horticulture and the plant sciences.

These workforce trends are driven by:

a) Land use changes particularly fires and drought have dramatically increased the need for trained plant science/horticulture and land-use specialists that have skills in: soils conservation, integrated pest management, water conservation/irrigation, ecological restoration, native plant propagation/maintenance, and seed production.

b) California has continued to increase legislation and demand improved certification of workers in this field specifically; legislation in water supply (Governors 25% reduction mandate) and the 2017 Groundwater Sustainability Act have predicted that landscape and horticulture professionals must have certifications such as; Qualified Water Efficient Landscaper-EPA(QWEL)and Certified Landscape Irrigation Auditor - Irrigation Association(CLIA; Pesticide Applicator and Pest Control Advisor- CA Department of Pest Regulation; California's greenhouse gas legislation "AB 32" has led to significant changes in solid waste management legislation, specifically for vegetative/green waste (50% of the solid waste stream), must now be composted and no longer can be disposed at the solid waste facilities.

c) The legalization of Industrial Hemp and Marijuana in California and a production focus in the local municipalities of Hesperia and Adelanto have greatly increased the need for specialized propagation skills and horticulture/greenhouse management expertise.

In this "climate" of significant change and job growth this plan will address these needs by the following enhancements to curriculum and the program:

1. Refining a two year focused course of study that allows students to take a single class or several classes to achieve 3 stackable Career Technical Certificate of Achievement

* Floral Design- 11or 12 units
* Plant Science and Sustainable Agriculture- 22- 25 units
* Horticulture and Landscaping- 24-27 units.

Students will also be positioned to receive a Associates Degree in Environmental Horticulture and/or take advantage of seamless transfer via the Agriculture and Plant Sciences Associates Transfer Degree (ADT) to a university (several higher level and government jobs require a four-year degree) and enter a career in this rapidly expanding field.

2. Partner with local High Schools to make college classes available to high school students and facilitate their access to a college education and explore career options. AGNR has traditionally responded by offering this access via: Concurrent Enrollment and CTE Articulation Agreements. This plan will facilitate the further introduction of the Career and College Pathway (CCAP)/Dual Enrollment for at least three AGNR classes and up to eight sections into Local High Schools.

3. Teach the key sciences needed to compete in this career field, to include:

a. Plant/Horticulture Sciences

b. Soil Science

c. Water Science

d. Geographic Information Science

e. Environmental Sciences

4. Teach the key work and technology skills needed to compete in this career field, to include:

a. Propagation and Tissue Culture Techniques

b. Seed Collection, Evaluation, and Processing Techniques

c. Irrigation and Landscape Design

d. Integrated Pest Management

e. Plant Materials Usage and Identification

f. Greenhouse and Nursery Management Skills

g. Floral Design

h. Composting and Vermiculture

I. Geographic Information Systems (GIS)

j. Soil and Water Analysis Technologies

5. Linkages to other VVC Departments by co-developing classes and including other Department's classes as electives in our Certificates: Computer Science (Data Management); Political Science (Environmental Policy).

6. Developing industry relevant CTE classes and industry recognized certificates that prepare students for entry into careers in this sector and facilitate industry required license exams. Examples include: Qualified Water Efficient Landscaper (QWEL-EPA); Irrigation Technician and Auditor (Irrigation Association); Pest Control Advisor (PCA)-California Pest Control Dept.

7. Maintain and enhance multiple Community and Industry Partnerships/Relationships (current total of 18) via: AGNR staff serving on the boards of community organizations; volunteering in multiple community outreach events; having professionals teach as adjunct; industry professionals serving on AGNR Advisory Board, offering guest lectures, internships and mentoring our students. Educational relevance is also enhanced by “hands-on” experiential learning through our labs and field study experiences. Examples include: serving on the Alliance for Water and Conservation (AWAC); Irrigation and Water Management Workshops with the Mojave Desert Resource Conservation District (MDRCD), Mojave Water Agency (MWA) and Victor Valley Waste Water Authority (VVWRA) and Work Experience/Internships with local agencies and industry that enhance on the job soft and real-world skills.

**Department Data**

The implementation of this Pathway and these COA’s will continue to improve AGNR Department enrollment. Partial implementation of these classes has begun, resulting in:

**FTES**- 12.2% increase in FTES from 2015-2016 (82.7) to 2016-2017 (94.9) school year and 6% in 2017-2018 (**99 FTES**)

**Enrollment-** growth of 16% in 2016-2017 over 2015-2016 and a further 6% in 2017-2018 **Student Retention** saw a 7.6 % increase in from 2015-2016 (86.9%) to 2016-2017 (93.5%) school year and 1% in 2017-2018 (94.5%)

**These trends are expected increase with the full introduction of this pathway, new labs, technology training and a focused course of study**

**Important Needs** (Source of Funds in Blue)

1. **New Full-Time Agriculture/Plant Sciences Instructor** to implement CTE Pathway in 2019-2020 and continue building curriculum/labs and implement the curriculum**.** Teach science and technical rich classes**. PRAISE**

**Note**: Neville Slade, MSC in Animal Physiology and 25 years’ experience in animal health/veterinary science would then assume development, full implementation and teaching of the Animal Science and Veterinary Assistant Pathway in 2020-2021. Best practice would therefore be to hire a new Plant Science and Sustainable Agriculture instructor first (see attached Plant Sciences and Sustainable Agriculture Career Pathway) to assume his current teaching load in this focus area.

1. **Educational Supplies Augmentation** new continuing budget for this program that does not exist at present- $12,000 **SWF and PRAISE**
2. **Capital Improvement** to build and provide furniture for resource Agriculture Science Lab and AGNR Computer Lab **SWF**
3. **Equipment** to resource Agriculture Science Lab and AGNR Computer Lab **SWF 3PERKINS**
4. **Program Coordinator** to oversee evaluation, strengthening, and revision of the curriculum and direct program development to ensure relevance and alignment from education to employment **PRAISE and SWF**
5. **Faculty Curriculum Stipends** for building, strengthening, and revision of the classes in which Full-time Instructor (Neville Slade) does not have expertise, to include: course outline; unit detail (content and assignments); resources needed; labs and assessments. Lab updates will include -full Lab documentation (Lab and/or Technology Skill Project Descriptions, Student Lab Report and/or Technology Skill Project Templates and Equipment/ Supplies Lists. **SWF 3 and PRAISE**
6. **Laboratory Technician** to resource and assist with Agriculture Science Lab and AGNR Computer Lab **PRAISE**

Note partially paid for needed Supplies and Equipment accomplished with Residual Perkins funds in Spring 2019 ($56,000)- with an additional $94,609.08needed to facilitate the functionality of these labs and lab classes in 2019-2020 school year, see SWF 3 Budget below

**Praise Alignment**

Goal #1- Develop and Implement Plant Sciences and Sustainable Agriculture Career Pathway

**L MI Data**

Local Advisory to meets biannually - next meeting May, 2018.

Workforce data for this plan is aggregated from several sources, given that several of the job categories are new and emerging and are captured in various reports.

Includes:

1) LMI Resource Library

2) OneNet

3) Job Scans from Centers for Excellence

Trends for the Agricultural and Natural Resource Careers

It is important to note several trends and special circumstances that underlie this rapidly evolving field of study. The Environmental Sciences (soil science, plant science, animal science, environmental science, geographic information science) prepare students for a very wide range of careers. Some of these careers particularly those in government agencies require a bachelor’s degree for significant advancement, particularly in government Agencies. The nature of the agriculture and natural resources industry in California and the location of Victor Valley College allow students to access jobs in several contiguous counties – Los Angeles, Riverside and Kern Counties. These are particularly important because San Bernardino County provides much of the natural resources to the population centers in these counties and Kern County is one of the most important agricultural counties in the United States. This Plant Sciences pathway with the AST degree option provides one of very few mechanisms for an estimated 40% of High School Graduates to seamlessly transfer to these majors in the Cal State System given that only less than 10% of HS seniors are transfer directly to a University.

Career Categories LMI Data

Nursery and Greenhouse Managers - 11-9013.01

Projected Employment for Farmers, Ranchers, and Other Agricultural Managers, including Nursery and Greenhouse Managers in CALIFORNIA

Median wages (2016) $31.91 hourly, $66,360 annual

Employment (2016) 1,029,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +20% Job Growth

Projected job openings (2016-2026) 84,800

Top industries (2016) Agriculture, Forestry, Fishing, and Hunting (27% employed in this sector)

(see all industries)

Farm and Ranch Managers - 11-9013.02

Projected Employment for Farmers, Ranchers, and Other Agricultural Managers, including Farm and Ranch Managers in CALIFORNIA

Median wages (2016) $31.91 hourly, $66,360 annual

Employment (2016) 1,029,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +20% Growth

Projected job openings (2016-2026) 84,800

Top industries (2016) Agriculture, Forestry, Fishing, and Hunting (27% employed in this sector)

(see all industries)

Soil and Water Conservationists - 19-1031.01

Projected Employment for Conservation Scientists, including Soil and Water Conservationists in CALIFORNIA

Median wages (2016) $29.72 hourly, $61,810 annual

Employment (2016) 22,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +17% Growth

Projected job openings (2016-2026) 2,000

Top industries (2016) Government (75% employed in this sector)

Other Services (Except Public Administration) (12%)

(see all industries)

Agricultural Engineers - 17-2021.00

Projected Employment for Agricultural Engineers in CALIFORNIA

Median wages (2016) $35.40 hourly, $73,640 annual

Employment (2016) 3,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino No Data Available

Projected job openings (2016-2026) 200

Top industries (2016) Government (23% employed in this sector)

Professional, Scientific, and Technical Services (23%)

Agriculture, Forestry, Fishing, and Hunting (21%)

(see all industries)

Range Managers - 19-1031.02

Projected Employment for Conservation Scientists, including Range Managers in CALIFORNIA

Median wages (2016) $29.72 hourly, $61,810 annual

Employment (2016) 22,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +17% Growth

Projected job openings (2016-2026) 2,000

Top industries (2016) Government (75% employed in this sector)

Other Services (Except Public Administration) (12%)

(see all industries)

Forest and Conservation Technicians - 19-4093.00

Projected Employment for Forest and Conservation Technicians in CALIFORNIA

Median wages (2016) $17.10 hourly, $35,560 annual

Employment (2016) 33,000 employees

Projected growth (2016-2026) Slower than average (2% to 4%)

California/Riverside/San Bernardino +3% Growth

Projected job openings (2016-2026) 4,000

Top industries (2016) Government (92% employed in this sector)

(see all industries)

Farm and Home Management Advisors - 25-9021.00

Projected Employment for Farm and Home Management Advisors in CALIFORNIA

Median wages (2016) $23.79 hourly, $49,490 annual

Employment (2016) 10,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino No Data Available

Projected job openings (2016-2026) 1,000

Top industries (2016) Educational Services (74% employed in this sector)

Government (14%)

(see all industries)

Floral Designers - 27-1023.00

Projected Employment for Floral Designers in CALIFORNIA

Median wages (2016) $12.43 hourly, $25,850 annual

Employment (2016) 55,000 employees

Projected growth (2016-2026) Decline (-2% or lower)

California/Riverside/San Bernardino +12% Growth

Projected job openings (2016-2026) 4,600

Top industries (2016) Retail Trade (72% employed in this sector)

(see all industries)

First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers - 37-1012.00

Projected Employment for First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers in CALIFORNIA

Median wages (2016) $21.99 hourly, $45,740 annual

Employment (2016) 178,000 employees

Projected growth (2016-2026) Faster than average (10% to 14%)

California/Riverside/San Bernardino +10% Growth

Projected job openings (2016-2026) 19,000

Top industries (2016) Administrative and Support Services (35% employed in this sector)

(see all industries)

Pest Control Workers - 37-2021.00

Projected Employment for Pest Control Workers in CALIFORNIA

Median wages (2016) $15.88 hourly, $33,040 annual

Employment (2016) 79,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +4% Growth

Projected job openings (2016-2026) 11,600

Top industries (2016) Administrative and Support Services (89% employed in this sector)

(see all industries)

Landscaping and Grounds-Keeping Workers - 37-3011.00

Projected Employment for Landscaping and Grounds-Keeping Workers in CALIFORNIA

Median wages (2016) $12.65 hourly, $26,320 annual

Employment (2016) 1,198,000 employees

Projected growth (2016-2026) Faster than average (10% to 14%)

California/Riverside/San Bernardino +11% Growth

Projected job openings (2016-2026) 161,100

Top industries (2016) Administrative and Support Services (46% employed in this sector)

(see all industries)

Pesticide Handlers, Sprayers, and Applicators, Vegetation - 37-3012.00

Projected Employment for Pesticide Handlers, Sprayers, and Applicators, Vegetation in CALIFORNIA

Median wages (2016) $16.22 hourly, $33,740 annual

Employment (2016) 38,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +12% Growth

Projected job openings (2016-2026) 4,900

Top industries (2016) Administrative and Support Services (37% employed in this sector)

Agriculture, Forestry, Fishing, and Hunting (19%)

Wholesale Trade (12%)

(see all industries)

Tree Trimmers and Pruners - 37-3013.00

Projected Employment for Tree Trimmers and Pruners in CALIFORNIA

Median wages (2016) $16.84 hourly, $35,030 annual

Employment (2016) 55,000 employees

Projected growth (2016-2026) Faster than average (10% to 14%)

California/Riverside/San Bernardino +9% Growth

Projected job openings (2016-2026) 7,400

Top industries (2016) Administrative and Support Services (64% employed in this sector)

(see all industries)

First-Line Supervisors of Agricultural Crop and Horticultural Workers - 45-1011.07

Projected Employment for First-Line Supervisors of Farming, Fishing, and Forestry Workers, including First-Line Supervisors of Agricultural Crop and Horticultural Workers in CALIFORNIA

Median wages (2016) $21.79 hourly, $45,320 annual

Employment (2016) 49,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +9% Growth

Projected job openings (2016-2026) 6,700

Top industries (2016) Agriculture, Forestry, Fishing, and Hunting (70% employed in this sector)

(see all industries)

Agricultural Inspectors - 45-2011.00

Projected Employment for Agricultural Inspectors in CALIFORNIA

Median wages (2016) $20.58 hourly, $42,800 annual

Employment (2016) 16,000 employees

Projected growth (2016-2026) Average (5% to 9%)

California/Riverside/San Bernardino +15% Growth

Projected job openings (2016-2026) 2,200

Top industries (2016) Government (73% employed in this sector)

(see all industries)

Nursery Workers - 45-2092.01

Projected Employment for Farmworkers and Laborers, Crop, Nursery, and Greenhouse, including Nursery Workers in CALIFORNIA

Median wages (2016) $10.58 hourly, $22,000 annual

Employment (2016) 504,000 employees

Projected growth (2016-2026) Little or no change (-1% to 1%)

California/Riverside/San Bernardino +12% Growth

Projected job openings (2016-2026) 76,800

Top industries (2016) Agriculture, Forestry, Fishing, and Hunting (88% employed in this sector)

(see all industries)

Farmworkers and Laborers, Crop - 45-2092.02

Projected Employment for Farmworkers and Laborers, Crop, Nursery, and Greenhouse in CALIFORNIA

Median wages (2016) $10.58 hourly, $22,000 annual

Employment (2016) 504,000 employees

Projected growth (2016-2026) Little or no change (-1% to 1%)

California/Riverside/San Bernardino +12% Growth

Projected job openings (2016-2026) 76,800

Top industries (2016) Agriculture, Forestry, Fishing, and Hunting (88% employed in this sector)

(see all industries)

Farm-workers, Farm, Ranch,Animals and Aquaculture – 45-2093.00

Projected Employment for Farm-workers, Farm, Ranch, and Aquaculture in CA

Median wages (2016) $11.79 hourly, $24,520 annual

Employment (2016) 268,000 employees

Projected growth (2016-2026) Decline (-2% or lower)

California/Riverside/San Bernardino Growth +4%

Projected job openings (2016-2026) 38,600

Top industries (2016) Agriculture, Forestry, Fishing, and Hunting (92% employed in this sector)

(see all industries)

Forest and Conservation Workers - 45-4011.00

Projected Employment for Forest and Conservation Workers in CALIFORNIA

Median wages (2016) $12.95 hourly, $26,940 annual

Employment (2016) 14,000 employees

Projected growth (2016-2026) Little or no change (-1% to 1%)

California/Riverside/San Bernardino +10% Growth

Projected job openings (2016-2026) 2,200

Top industries (2016) Government (39% employed in this sector)

Agriculture, Forestry, Fishing, and Hunting (35%)

(see all industries)

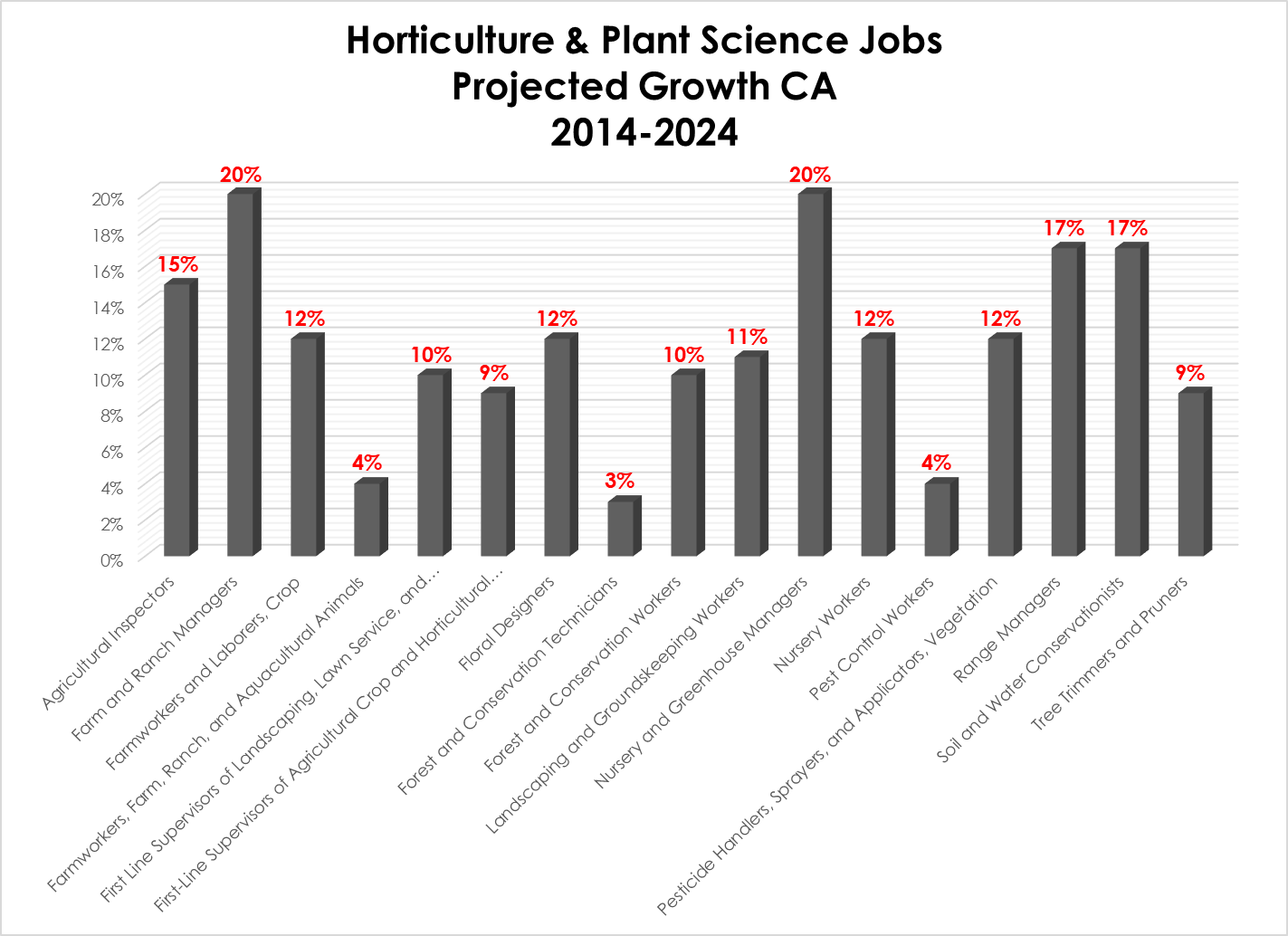
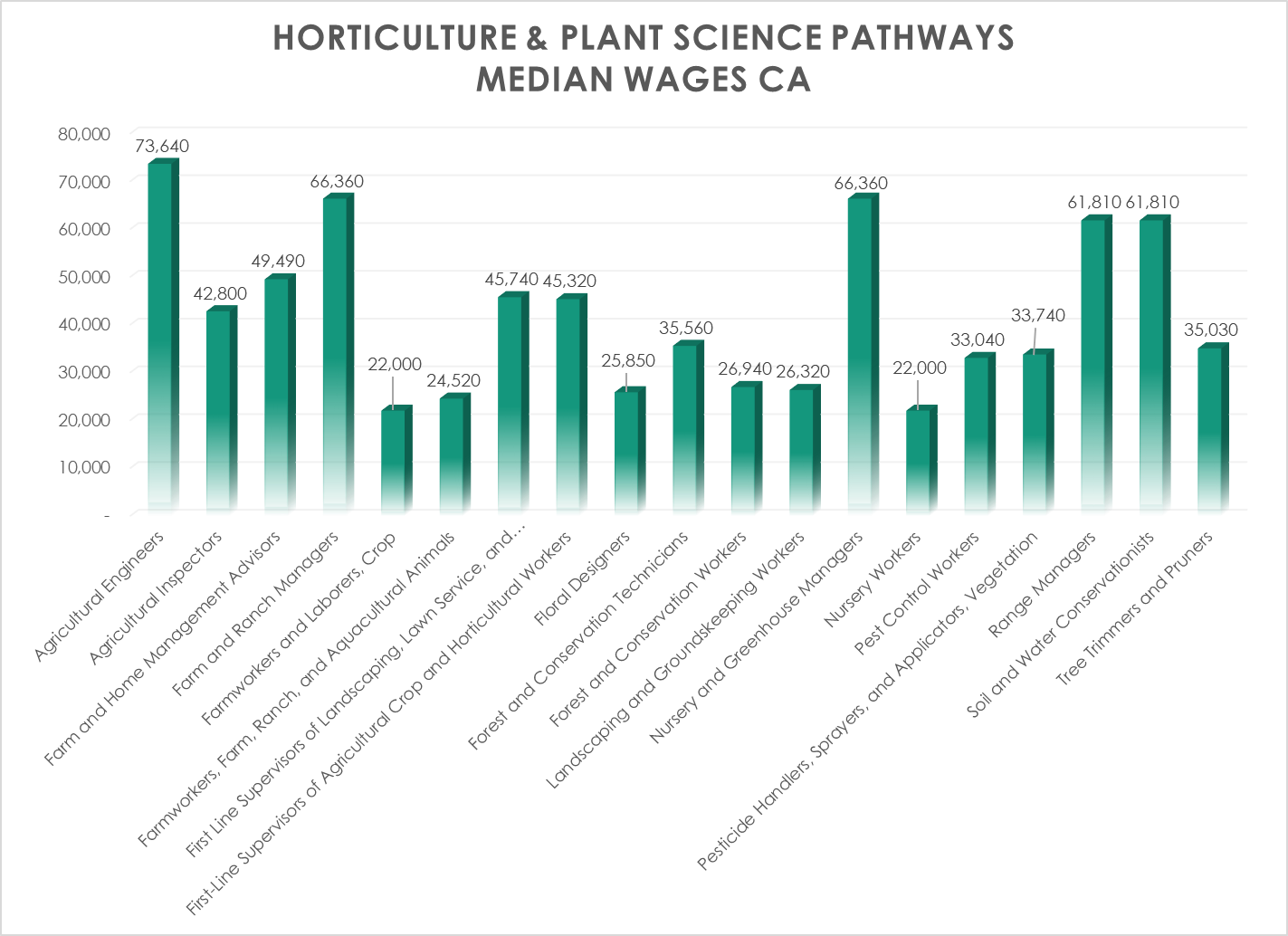
**Employment Trends for the Agricultural Sciences and Natural Resource Management Pathway**

Introduction

It is important to note several trends and special circumstances that underlie this rapidly evolving field of study. The Environmental Sciences (soil science, plant science, animal science, environmental science, geographic information science) prepare students for a very wide range of careers. Many of these careers particularly those in government agencies require a bachelor’s degree for significant advancement\*. The nature of the agriculture and natural resources industry in California and the location of Victor Valley College allow students to access jobs in several contiguous counties – Los Angeles, Riverside and Kern Counties. These are particularly important because San Bernardino County provides much of the natural resources to the population centers in these counties and Kern County is one of the most important agricultural counties in the United States.

\*This ESNR pathway with the AST degree option provides one of very few mechanisms for an estimated 40% of High School Graduates to seamlessly transfer to these majors in the Cal State System given that only less than 10% of HS seniors are transfer directly to a University.



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